

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2004/002593

International filing date (day/month/year)
16.06.2004

Priority date (day/month/year)
17.06.2003

International Patent Classification (IPC) or both national classification and IPC
G06T15/20

Applicant
IMAGINATION TECHNOLOGIES LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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10/564306

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/GB2004/002593

IAP20 Rec'd PCT/TO 10 JAN 2006

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2004/002593

Box No. II Priority

1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2004/002593

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 12, 13

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the whole application or for said claims Nos. 12,13
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
 - the written form ☐ has not been furnished
 - ☐ does not comply with the standard
 - the computer readable form ☐ has not been furnished
 - ☐ does not comply with the standard
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
- ☐ See separate sheet for further details

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2004/002593

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|------|
| Novelty (N) | Yes: Claims | |
| | No: Claims | 1-11 |
| Inventive step (IS) | Yes: Claims | |
| | No: Claims | 1-11 |
| Industrial applicability (IA) | Yes: Claims | 1-11 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/GB2004/002593

Re Item V

1. Reference is made to the following documents:

D1: US-A-5 548 709 (HANNAH MARC R ET AL) 20 August 1996 (1996-08-20)
D2: POWERVR: "PowerVR - White Paper 1.0.5" 14 November 2000 (2000-11-14), POWERVR 2000 , XP002297806 Retrieved from the Internet:
URL: http://www.beyond3d.com/reviews/video1ogic/vivid/PowerVR_WhitePaper.pdf [retrieved on 2004-09-24]

2. Independent **claims 1 and 8** are not clear and, thus, do not meet the requirements of Article 6 PCT.

In the description, page 3, paragraphs 3 and 4, the gist of the application is given as follows: *"We have appreciated that by utilising the internal storage of a tile based 3D graphics engine a number of mipmap levels can be generated for e.g. a dynamic environment texture map with no additional hardware passes. (...) Preferably, in a tile based 3D graphics engine a memory buffer known as the tile buffer is used for temporary storage of mipmap levels as they are generated. In normal usage the tile buffer is used to store a rectangular portion of the image being rendered"*. The invention according to the description is, thus, using the tile buffer of a tile based 3D graphics engine for a purpose other than intended, i.e. using it for the automatic generation of a mipmap chain, so that no additional storage has to be provided for that purpose.

Independent claims 1 and 8, however, do not define this core of the invention. Their overly broad definition does not appear to be supported by the description and lacks the essential features of the invention presented there, in particular it lacks a reference to a tile based 3D rendering engine and its tile buffer. Hence, claims 1 and 8 are not clear.

3. The dependent claims do not define the underlying architecture of a tile based 3D graphics engine either. In particular, they only vaguely refer to
- "a main memory of a computer graphics system" (see claims 2, 10), which is unspecific due to the enormous variety of architectures for computer graphics systems,
 - "a temporary buffer" (see claims 3, 9, 10), where it is not clear how the (physical) entity of a buffer can be temporary,

- iii. a (tile) *"buffer used for temporarily storing image data prior to writing it to a frame buffer"* (see claim 4), which may be any intermediate buffer, and
- iv. a completely undefined *"process"* (see claim 7).

Hence, the dependent claims are not clear either and, thus, do not meet the requirements of Article 6 PCT.

- 4. Furthermore, the above-mentioned lack of clarity notwithstanding, the subject-matter of independent **claims 1 and 8** is not new in the sense of Article 33(2) PCT, and therefore the criteria of Article 33(1) PCT are not met.

The discussion will be limited to apparatus claim 1, since method claim 8 defines the same features using the same terminology.

D1 discloses

- i. *an apparatus to generate automatically a mipmap chain of texture images from a portion of texture image data for use in texturing a computer graphic image*: a semiconductor chip used for texture mapping in a computer graphics system (see abstract) contains a mip map generator 202 (see Fig. 2) that accepts as input "complete images" or "tiled inputs", i.e. portions of texture images (see column 7, lines 21-25);
- ii. *means to store temporarily the portion of texture image data*: "textures are stored in a main memory" (see abstract) or - as implicitly disclosed - temporarily in an intermediate buffer necessary for "tiled inputs" (see column 7, line 24);
- iii. *filtering means to generate at least one lower level of mipmap data from the texture data*: "the mip map generator performs a 2x2 box filter (i.e., averaging filter) to produce each texel for the next rougher mip map level" (see column 7, lines 29-31);
- iv. *means to store the lower level of mipmap texture image for use in texturing*: the lower level is temporarily stored in line stores 711 and 712 and RAM 714 (see column 7, lines 54-56; Fig. 7) before it goes to the DRAM 205 (see column 7, lines 60 - column 8, line 1) for use in texturing;

Hence, claim 1 is not new.

- 5. As far as the dependent claims can presently be understood (see clarity objections under item 3.), they do not appear to contain any features which, in combination with the features of any claim to which they refer, meet the require-

ments of the PCT in respect of novelty and/or inventive step, since D1 already defines several intermediate buffers, also in the main memory (see abstract), for temporarily storing texture image data in iteratively generating a mip map.

Re Item VII

1. Independent **claims 1 and 8** are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (D1) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
2. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
3. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 and D2 is not mentioned in the description, nor are these documents identified therein.
4. Claim 5 wrongly refers to itself, although it should probably refer to claim 4.

Updated 24 August 2004

PCT Search & Examination

Cases FILED after 1 January 2004

General

This note is provided to you with the International Search results and the Written Opinion of the ISA.

Demand Deadline for some countries

For countries that have chosen not to automatically extend the national phase deadline to 30/31 months, the deadline for filing a demand remains 19m from priority. This is monitored on the following formality:

DEMAND ONLY FOR NON ART 22 COUNTRIES (19M)

The action sheet for this should be completed with a done date if filing the demand before 19m, otherwise the action sheet can just ask for this date to be cancelled.

Demand Deadline & Response To Opinion for all other cases

The deadline for filing the demand (other then for the countries above) is the latest of 22m from priority or 3m from the search report. This is the same deadline as the deadline for filing a response to the written opinion which you will receive with the search results. You have two options:

1. If you do NOT require international examination you do not need to respond to the Written opinion and do not need to file a demand. The ISA will produce an International Report on Patentability (IPRP), based on the written opinion on which you can voluntarily comment if you wish.
2. If you DO require International examination, then you need to file a response to the written opinion within the SAME DEADLINE as the deadline for filing the demand, namely the latest of 22m from priority or 3m from the search report (the response can be later, but you risk it being ignored if you do so).

Formalities will automatically monitor the deadline of the later of 22m from priority or 3m from the search report using the appropriate one of the following two formalities:

DEMAND AND RESPONSE – SEARCH < 19M (22M)

DEMAND AND RESPONSE – SEARCH > 19M (SEARCH + 3M)

Note that there is **only one due date** monitored for filing the demand **and** response – you should only ask for this deadline to be cancelled when you have completed both the filing of the demand and the response (you are advised to do both together, if not do not ask for the date to be cancelled until you have done both).

IML